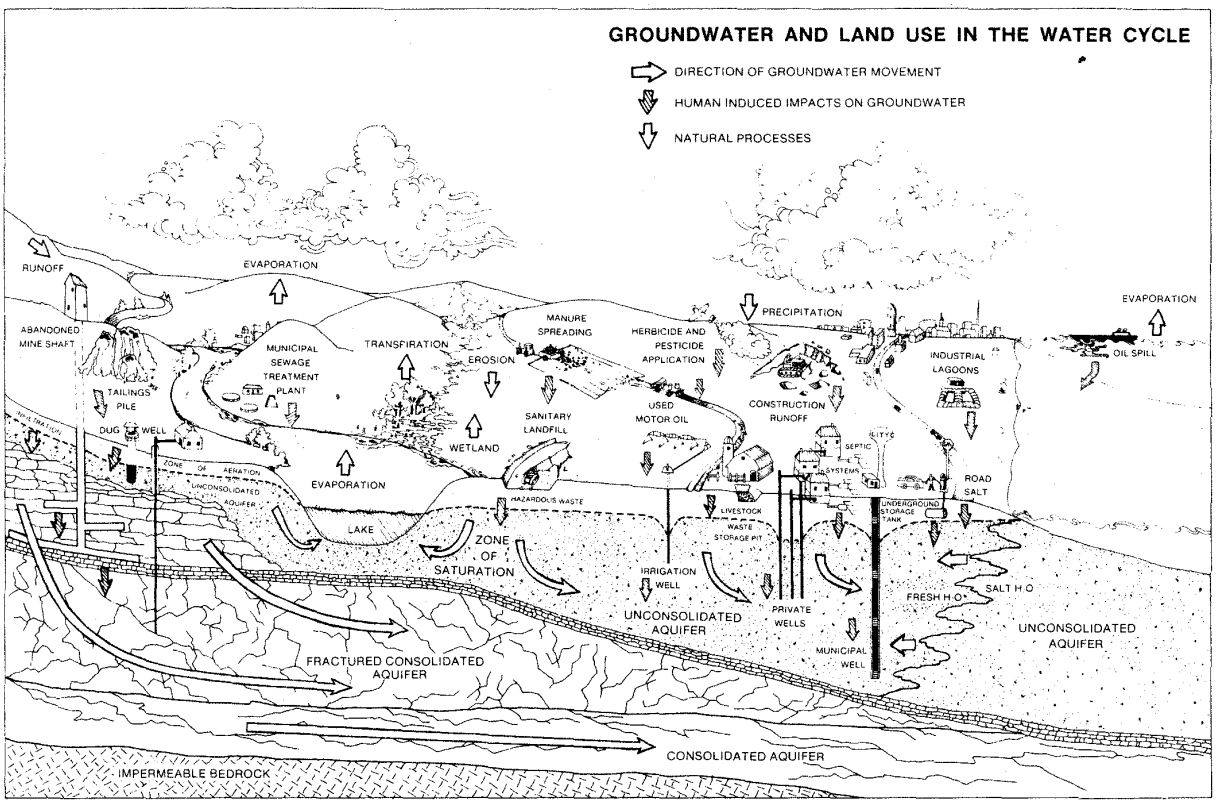
(1988)

Groundwater Protection in Virginia

Annual Report of the Groundwater Protection Steering Committee



Groundwater Protection Achievements

New Programs

Virginia Pollution Abatement Permit Program p. 2

Underground Storage Tank Program p. 3

New Legislation

New Landfill Regulations p. 4

New Well Construction Regulations p. 5

New Authority for Local Governments p. 6

Research & DemonstrationProjects

Health Dept. Research p. 6

Septage Issues Studied p. 7

Data Management p. 7

DRASTIC Maps p. 8

Nonpoint Source Pollution Control p. 8

Education and Training

Educational Programs p. 9

Technical Training p. 10

Policy Review

State Policy Studied p. 10

Organizational Notes

Groundwater Management Handbook p. 10

Emergency Response p. 11

The Groundwater Protection Strategy for Virginia

First Year Implementation Progress

It has been one year since the publication of the *Groundwater Protection Strategy for Virginia*, the document which sets the course of groundwater protection for the Commonwealth. In the first year of implementing the Strategy recommendations, a number of milestones on the way to providing better programs to protect groundwater quality have been passed. The purpose of this Annual Report of the Groundwater Protection Steering Committee is to review the progress

that has been made in the first year of implementing the Strategy and point out the significant achievements. The Steering Committee hopes that this newsletter will give readers a progress report on the state programs and initiatives of the past year, and that there can be real communication with the public.

The Groundwater Protection Steering Committee

The drawing reproduced on page one will be familiar to readers of the *Groundwater Protection Strategy for Virginia*. It shows how activities on the land surface have the potential to affect groundwater quality. The large number of these potentially polluting activities also shows that an effective groundwater protection effort must be broad-based and that the programs of many state agencies are involved.

Virginia's effort to plan for the preservation of groundwater quality was supported by a grant from the U. S. Environmental Protection Agency. EPA has offered grants to states to enable them to develop individualized plans for groundwater protection.

When it was time for the groundwater protection planning process to begin, it was clear that a Steering Committee of representatives of all the state agencies whose programs have potential groundwater quality impacts should be included in the planning. A review of existing programs identified nine agencies which should be represented on the Steering Committee:

Va. Water Control Board

Va. Dept. of Health

Va. Dept. of Waste Management

Va. Dept. of Housing and Community Development

Va. Dept. of Mines, Minerals and Energy

Va. Cooperative Extension Service

Va. Dept. of Agriculture and Consumer Services

Va. Dept. of Conservation and Historic Resources

Va. Council on the Environment

The Groundwater Protection Steering Committee began work in 1986, initially assessing the strengths and weaknesses of existing groundwater protection programs through an agency interview process. Interviewees were also asked to assess the major contamination threats to Virginia's groundwater resource, and ways that agencies could better coordinate their groundwater programs. Though the planning effort was primarily a state government initiative, there was also a workshop for individuals from business, citizen and environmental groups, the agricultural community and local government to discuss concerns and make recommendations to the Steering Committee. The information generated in these sessions, and the analysis of the Steering Committee were the basis of the *Groundwater Protection Strategy for Virginia.*

Copies of the *Strategy* and/or the accompanying Summary document can be obtained from the Virginia Water Control Board, 2111 North Hamilton St., Richmond, Virginia, 23230.

The goal of groundwater protection planning must be to anticipate and prevent groundwater contamination.

New Programs

VWCB Revises Permit Program to Include VPA Permits

The Virginia Water Control Board (VWCB) has taken the first step in revising its main permit program dealing with facilities which pose potential threats to groundwater. The former No-Discharge Certificate program will be called the Virginia Pollution Abatement (VPA) permit program. The newly codified regulations associated with this program are described, in brief, below.

The VWCB has authority to issue permits for waste discharges into state waters. The most familiar example of this permitting authority is the NPDES permit for discharge of treated wastewater to surface streams. NPDES stands for the National Pollution Discharge Elimination System — the system which was established by the federal Clean Water Act. Virginia used its authority under the State Water Control Law to establish the No-Discharge Certificate program, designed to regulate sources of pollutants that are not point source discharges to surface water. Examples would be land application of wastewaters or sludge, or concentrated animal waste management lagoons. The No-Discharge Certificate program was started by the VWCB to address operations which produced "nosurface water discharge" of wastes but were still perceived to threaten state waters. The new VPA permit provides greater regulatory control over such activities.

The VPA permit will be phased in, with existing No-Discharge Certificates remaining in effect until they expire or until the owner is notified by the VWCB that a VPA permit is required. A VPA permit will be required for animal waste lagoons, industrial waste lagoons and land application of sludge. Other features of the new VPA regulations include:

- VPA permits may be issued for not more than 10 years
- VPA permits for concentrated

New Programs (cont.)

animal feeding operations will be issued for not more than 5 years
- permit issuance will include a public participation procedure.

To date there have been 1790 No Discharge Certificates issued — approximately two-thirds for animal waste lagoons. As these Certificates expire, applications will be processed for new VPA permits and the operations will come under the new requirements of the Virginia Pollution Abatement program. New facilities will be permitted using the new regulations.

For more information, contact Martin Ferguson, VWCB, P. O. Box 11143, 2111 N. Hamilton St., Richmond, Va., 23230.

Virginia's New UST Program

In the past ten years, there has been a dramatic increase in the number of complaints of groundwater contamination caused by leaking underground storage tanks (USTs). The actual magnitude of the problem is difficult to determine because of the "out of sight" nature of the problem, but EPA estimates that as many as 35% of USTs eventually leak. The growing concern about this threat to groundwater resources prompted the Virginia General Assembly to pass two important pieces of legislation in 1987.

Articles 9 and 10 of the Water Control Law authorize the Virginia Water Control Board to administer a state regulatory program similar to the Federal UST Program. Virginia's program will be more stringent in requiring notification and regulation of heating oil tanks with capacities greater than 5,000 gallons. It will also require the notification of all tanks taken out of service prior to 1974. The law also establishes financial responsibility for tank owners and sets up a Virginia cleanup fundto be used in conjunction with a federal fund.

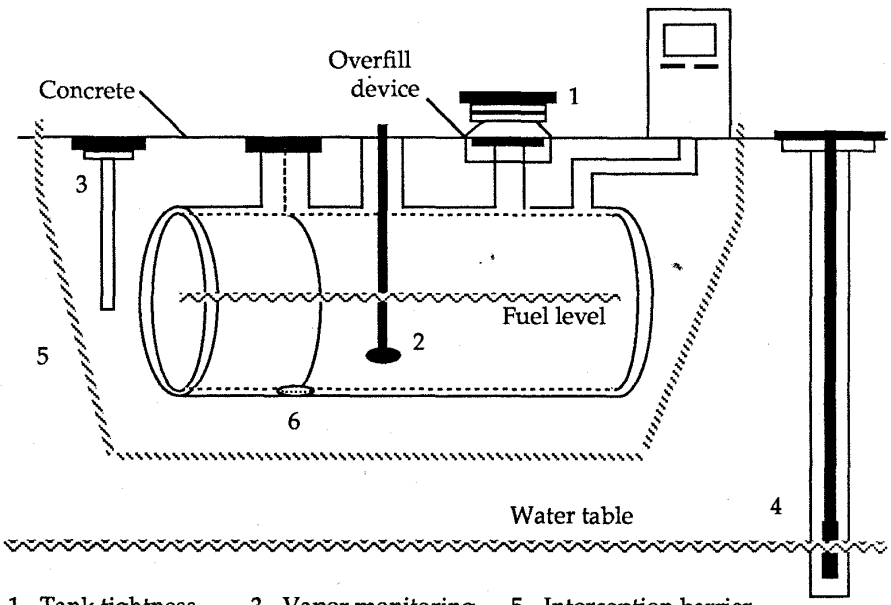
Statistics bear out the need for a UST regulatory program. Since 1979, the VWCB has received over 550 complaints about leaking USTs and the number continues to increase. These complaints usually involve contamination of a drinking water supply and are thus believed to represent only a fraction of the total number of leaking tanks. As existing tanks continue to age and deteriorate, the problems could become much worse. For this reason, new regulations will require a phased upgrade of all old tanks; strict controls on new tanks; and funds will be made available to cleanup leaking tanks on a priority basis. Some of the requirements for new USTs include:
- certification of proper installation
- corrosion protection
- spill and overflow prevention devices
- leak detection devices
- evidence of financial responsibility.

Leak detection methods are especially important in furthering the anticipate and prevent strategy for groundwater protection. Some alternative types of leak detection systems are shown below.

The tank notification program initiated by EPA and the VWCB produced information on the number of USTs in Virginia. There are currently 58,461 USTs at 21,462 facilities in the state. Final federal regulations are expected to be out in the fall of 1988.

For more information on the provisions of the Virginia Underground Storage Tank regulations contact Russell P. Ellison, VWCB, P. O. Box 11143, 2111 N. Hamilton St., Richmond, Va. 23230. For more information on leak cleanup requirements, contact David P. Chance at the same address.

Alternative UST Leak Detection Devices



1 - Tank tightness testing
2 - In-tank monitor
3 - Vapor monitoring in the soil
4 - Groundwater monitoring well
5 - Interception barrier
6 - Double-wall tank with interstitial monitor

New Programs (cont.)

New Landfill Regulations Include Groundwater Protection Measures

The number one goal of the Virginia Department of Waste Management's new landfill regulations is the prevention of groundwater contamination caused by waste disposal. The regulations contain specific landfill design requirements to keep wastes out of underground water. Monitoring requirements will let the agency know if these protective measures have failed.

The Department of Waste Management (DWM) is charged with regulating solid, hazardous, and radioactive waste. The Department is also responsible for emergency planning involving hazardous materials, and for regulating how these materials are transported. It is in regulating solid and hazardous waste that groundwater protection is foremost.

The Department has drafted new regulations for managing solid waste in Virginia. Solid waste is the discarded material we use in our daily lives — the most common example is our household garbage, though solid waste is also generated by industry, commerce, mining and agriculture. DWM considered many factors in the new regulations:

- use of suitable sites for landfills
- monitoring requirements
- uniform engineering design guidelines
- coverage of existing as well as new sites
- periodic review and repermitting
- day-to-day operation requirements
- closure plans
- financial responsibility requirements
- conditions for granting a variance to the regulations.

The new solid waste regulations are scheduled to take effect in January 1989. They address groundwater protection through minimum standards for site location (for example, avoiding areas with high water tables), considering hydrogeologic conditions (groundwater flow), specifying engineering design and construction (clay or synthetic liner, leachate collection/ treatment/ disposal system, groundwater monitoring program), operation plans (staff, security, equipment), closure plans (site closure, post-closure management, groundwater monitoring for a period of ten years), specifying groundwater protection standards and corrective action requirements, and financial assurance requirements for privately owned or operated facilities. A variance from the minimum standards requires the approval of the Executive Director and is granted only in cases where the regulations result in undue hardship to the applicant due to a unique situation. A variance is granted only when it will not result in an unreasonable risk to public health or the environment.

The new landfill regulations are also designed to promote inter-agency cooperation. For example, where design requirements include setting up a leachate collection system for landfills, there may be a need for on-site treatment of the liquid. The Department of Waste Management coordinates its efforts with the Virginia Water Control Board to insure that the proper permits for wastewater discharges are obtained.

DWM's hazardous waste management programs also stress groundwater protection. Hazardous waste gets its name from the fact that it is waste which poses a substantial present or potential hazard to public health or the environment if improperly managed. The federal government, through the Resource Conservation and Recovery Act of 1976 (RCRA), has prescribed the framework of hazardous waste management for all the states. Virginia's program has been authorized by the EPA to operate in lieu of the federal RCRA program. Along with stringent protective measures to prevent contamination, an applicant for a hazardous waste management permit must submit detailed information on the groundwater in the area of the proposed facility. Monitoring for groundwater contamination is required.

By requiring protective measures in facility design and by using monitoring to detect leaks, the DWM is seeking to carry out the call to anticipate and prevent groundwater contamination before it occurs.

For more information on the landfill regulations, contact the Dept. of Waste Management, Monroe Building - 11th Floor, 101 N. 14th St., Richmond, Va., 23219.

New Legislation

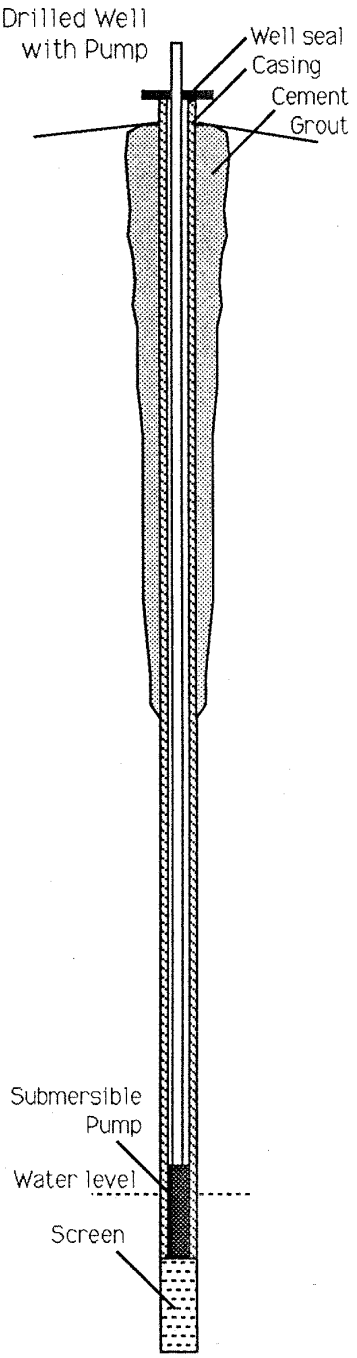
Health Department Sets Private Well Construction Regulations

Poor well construction can be the cause of groundwater contamination. A 1983 survey of shallow, bored household wells in south-central Virginia showed this to be true. To address this problem, the Health Department is developing regulations, expected to become effective Jan. 1, 1989, to establish construction standards for private wells in order to protect groundwater resources and public health.

Before issuing draft regulations, the Health Department's Division of Sanitarian Services met with a representative group of well drillers. The Institute for Environmental Negotiation helped arrange this series of working sessions. Information gained from conferring with practioners can help in developing appropriate regulations and avoiding conflict. The information that was shared in these sessions proved valuable in drafting the new well construction regulations.

The proposed private well regulations apply to the construction and location of all private wells, including both drinking water and non-drinking water wells. Construction standards require that all wells be cased and grouted to prevent contamination from entering the well and also to keep the well from becoming a conduit to the water bearing strata for surface pollution.

Private wells will be inspected before being placed into service. A water sample analyzed for bacteria will be required if the well is to be used for drinking water purposes. No additional follow-up inspection will be required for private drinking water wells since the permit issued by the Department of Health is a construction permit and not a permit to operate a private water supply. Voluntary inspections may be initiated when a citizen requests a fecal coliform bacteria test or when water quality information is required as part of a real estate transfer.



The new regulations will mesh with existing requirements for on-site wastewater disposal systems (septic tanks). An on-site wastewater disposal permit includes provisions for an adequate soil zone to allow sufficient bacterial breakdown of wastes before the effluent reaches groundwater. Sewage disposal regulations have a number of requirements to ensure that groundwater resources are protected. These include:

- set back distances to wells
- stand-off distances to rock outcrops
- stand-off distances between a trench bottom and the water table
- minimum soil criteria needed to renovate effluent.

The new regulations also involve interagency coordination in the review of technical and procedural aspects of the regulations as well as any proposed changes in the future. The Department of Health plans to coordinate permits and technical information with the Virginia Water Control Board for new wells.

For more information, contact the Division of Sanitarian Services, Virginia Department of Health, Madison Building, 109 Governor St., Richmond, Va., 23219.

New Legislation (cont.)

Local Governments Given Powers to Plan for Groundwater Protection

Virginia's 1988 General Assembly enacted two measures intended to encourage localities to plan for groundwater protection. This action implemented a major recommendation of the *Groundwater Protection Strategy.*

Section 15.1-446.1 of the Code of Virginia was amended to add ground and surface water studies to the things that may be considered when preparing a local comprehensive plan. And Section 15.1-489 was amended to add groundwater protection to the things that local zoning ordinances must be designed to consider.

The Groundwater Protection Steering Committee determined early that localities play a critical role in groundwater protection. Localities often have an opportunity to foresee potential contamination and take steps to prevent it. Yet in Virginia, where localities may exercise only those powers which are specifically granted to them by the General Assembly, some questioned whether the preservation of groundwater quality was appropriate under the existing local planning enabling legislation. There was no specific mention in those statutes of groundwater or surface water, though the statutes did provide generally for the survey and protection of natural resources. The Steering Committee recommended in the Groundwater Protection Strategy that local governments be granted specific authority to use their planning and zoning powers to protect groundwater quality.

With the backing of the Virginia Dept. of Housing and Community Development, bills were introduced to amend the statutes on comprehensive planning and zoning. The General Assembly enacted this legislation, effective July 1, 1988, realizing that the dual goal of anticipating and preventing groundwater contamination must first be addressed at the local level through the powers that localities have to control land use.

Research & Demonstration

Health Department Research Program

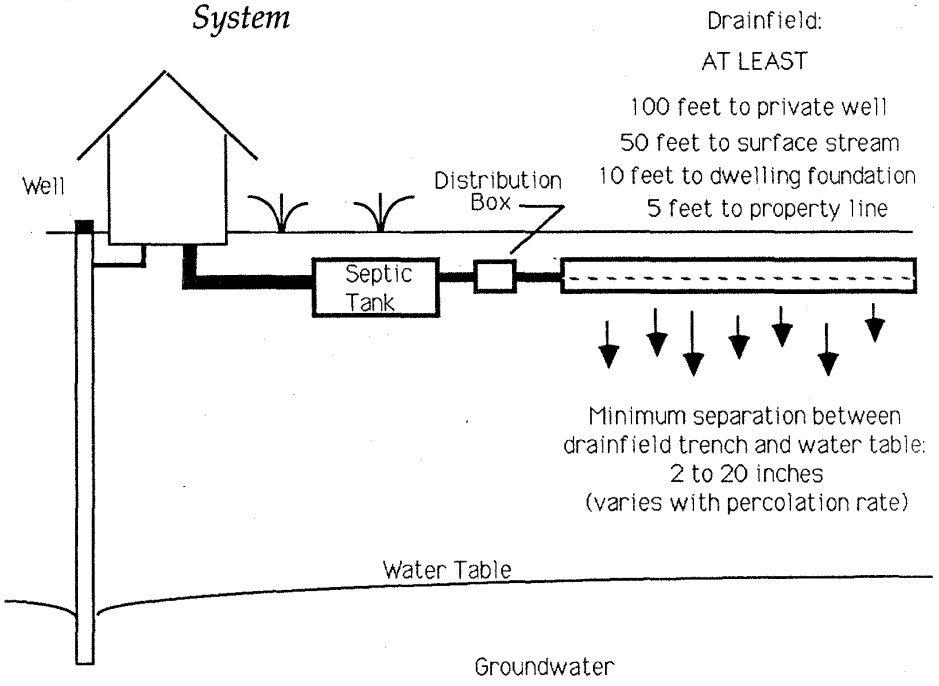
In thinking of septic tanks, we have lived too long by the adage "out of sight, out of mind" — as long as the wastewater stayed underground, the septic tank was doing its job of purifying the waste. We now know that if the waste percolates too quickly, there will be no natural purification and groundwater contamination can occur. It was for this reason that septic systems were identified in the *Groundwater Protection Strategy* as one of the more important potential groundwater pollution threats.

The Virginia Department of Health is carrying on an extensive research program designed to answer questions about improvements to on-site sewerage disposal practices. The Department is looking at alternatives to conventional septic tank systems as well as considering demonstration projects and management alternatives.

Alternative system designs may allow successful on-site sewage treatment where conventional septic systems aren't possible. Some of the alternatives that VDH is studying are low pressure distribution systems and similar low pressure pipe distribution systems that release waste material to the soil slowly. Spray irrigation may also be an alternative where soils are very thin. Basic research is being proposed in the appropriate dosing rates for common Virginia soils. Mass drainfield systems will be surveyed to determine their impact on groundwater contamination. There are also plans to develop a demonstration project of a low pressure distribution system to promote the benefits of such designs where they are needed. Finally, VDH is considering a study to determine whether a management district to improve maintenance of on-site sewage systems might be an option to forestall system failure.

This program of research will lead to better regulations which will permit environmentally sound alternative systems to be used.

Conventional Septic System



Septage Management Issues May Lead to New Regulations

Two septage management issues have challenged agencies to consider new regulations. The Virginia Department of Health is considering new regulations for mass drainfield systems. Mass drainfields are large septic tank systems designed to handle the waste from a number of homes or an apartment-type development. The Health Department and the Water Control Board are also working jointly on a review of the regulation of land disposal of septage. Land disposal of septage is the practice of applying sewage waste to the land as a soil conditioner and natural fertilizer. Both these practices have the potential to threaten public health and groundwater quality if they are not carried out properly.

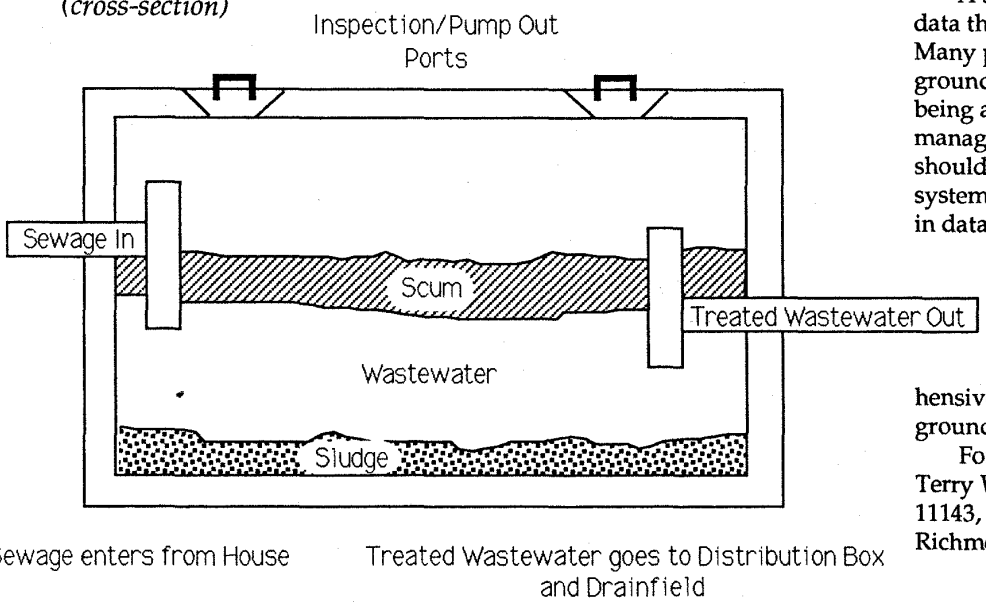
The Health Department has the responsibility for ensuring that there are no health threats caused by sewage management practices. In recent years, requests have come from developers to use mass drainfield systems where no public sewer is available. The larger volume of waste to be assimilated by the soil, the increased amount of liquid, and the potential for widespread contamination if a system fails are all factors in the need for special consideration of the mass drainfield issue. The Division of Sanitarian Services is the Health Department group charged with devising standards for mass drainfields. The Division is looking at a number of different options to control the impact of mass drainfields. These include:

- establishing maximum application rates to prevent excessive water mounding under the drainfield;
- requiring a minimum separation between the drainfield trench and groundwater;
- establishing maximum nitrate levels for groundwater leaving the site;
- requiring a percolation rate within an acceptable range;
- reserving a buffer area around the drainfield;
- dedicating the drainfield site for waste disposal purposes only.

It is hoped that some combination of these techniques will limit the potential for health-related or environmental impacts from mass drainfield systems.

For more information, contact the Division of Sanitarian Services, Virginia Department of Health, Madison Building, 109 Governor St., Richmond, Va., 23219.

Septic Tank
(cross-section)



Task Force Created to Study Data Management

Following a recommendation in the *Groundwater Protection Strategy*, the Virginia Water Control Board has retained a private consultant to study how groundwater data is collected and managed by state agencies. The consultant will recommend a system to coordinate this information.

The Groundwater Data Management Task Force was created by the Steering Committee to supervise this effort and has been tracking its progress. The results to date have been promising. Especially useful has been the exchange of information between agencies on the types of data they collect and a resulting improved inter-agency understanding. The end product of this project will be a report on alternatives for improving data collection and for better exchange of information among agencies.

Two priorities have emerged from the work done so far. One is the need to coordinate the collection and processing of data on private well construction. It is estimated that the new well construction regulations (see page 5) will result in 20,000 to 30,000 permit applications each year. This influx of new data must be handled as efficiently as possible so that it can be used in characterizing and protecting Virginia's groundwater.

A second priority is automating data that is not currently on computer. Many programs collect data on groundwater which is not currently being added to any automated data management system. This information should be entered into a computer system. These kinds of improvements in data management will lead to better management of groundwater resources. Inter-agency communication and sharing information on various activities will help develop a comprehensive picture of the status of groundwater resources statewide.

For more information, contact Terry Wagner, VWCB, P. O. Box 11143, 2111 N. Hamilton St., Richmond, Va., 23230.

DRASTIC: A New Tool for Groundwater Protection

How can localities decide whether their groundwater supplies are vulnerable to pollution? Is there a way to identify sensitive groundwater resources to aid in making land use decisions? These are some of the questions that the Virginia Water Control Board hopes will be answered by a new groundwater mapping technique called DRASTIC.

DRASTIC is an acronym that describes the factors used in a mapping system designed to evaluate the groundwater pollution potential of any area of the United States (see box). The system uses a set of factors relating to soil characteristics, rainfall, geology and topography to establish the potential for contamination of groundwater supplies. A numerical DRASTIC index is calculated from this information. These indexes can be mapped to show relative differences in pollution potential for the groundwater in an area.

With the aid of EPA grant funds, the Virginia Water Control Board (VWCB) has begun a demonstration mapping project in six Virginia counties to see whether the DRASTIC system will be useful as a planning tool in Virginia. The six counties were chosen in the Summer of 1987, one from each of the VWCB's six regions. Counties were chosen based on:

- hydrogeologic variability
- population using groundwater
- perceived pollution potential
- data availability.

The counties that are being mapped are Botetourt, Carroll, Rockingham, Prince William, Henrico and Middlesex.

Mapping teams from each county were formed, including a VWCB regional geologist, county staff, and a representative of the local Planning District Commission (PDC). The teams were trained by Dr. Jay Lehr, executive director of the National Water Well Association (NWWA) and one of the principle authors of the method. Each group then collected the necessary information, synthesized it and completed preliminary maps for their counties. These maps were then given a quality control review. Following revisions, the completed maps will go to NWWA for printing. NWWA will also write a final report which will contain an outline of the DRASTIC methodology, a description of the Virginia project and copies of the six county maps. A copy of this report will be sent to each county administrator in the state and each PDC office. The completion date for the report is November 1988.

A major goal of the demonstration project is to evaluate the usefulness of DRASTIC maps to local decision-makers. Therefore, there will be a period of time for the demonstration maps to be put to use in the counties before the system receives the full endorsement of the VWCB.

For more information on the DRASTIC project, contact Terry Wagner, VWCB, P. O. Box 11143, 2111 N. Hamilton St., Richmond, Va., 23230.

The parameters included in the DRASTIC system are:

(D) Depth to Water
(R) Recharge (precipitation)
(A) Aquifer Media
(S) Soil Media
(T) Topography
(I) Impact of the Vadose Zone
(C) Conductivity of the Aquifer

Nonpoint Source Pollution Control Improves Groundwater Protection

A number of the conservation programs that promote improved agricultural and urban land management to prevent nonpoint source pollution are contributing to groundwater protection. The Division of Soil and Water Conservation is in charge of these projects, working with Virginians to encourage voluntary use of the latest developments in land management to conserve soil and water resources.

The Best Management Practices (BMP) program shows farmers how to manage their land to avoid excessive runoff which can carry pollutants to streams. Two demonstration watershed projects, designed to prove the effectiveness of the BMP program in protecting surface water, have also shown that groundwater quality remains high in spite of intensive agricultural use of the land.

The cropland demonstration project is located in Westmoreland County on the headwaters of Nomini Creek. No-till planting methods are being evaluated through monitoring wells and soil cores to assess their impacts on groundwater. The animal waste watershed demonstration project is located in a dairy farming community in Fauquier County on Owl Run. Samples from existing wells were analyzed in 1988 and showed no contamination of groundwater. Waste management systems are planned at each dairy in the area and total nutrient management plans will be implemented on each of the farms there to demonstrate the effectiveness of the BMP programs.

Another program of agricultural nonpoint source pollution control emphasizes the proper use of fertilizers and animal waste. This program is jointly sponsored by the Virginia Cooperative Extension Service and the U. S. Department of Agriculture. Technical resources are being given to farmers to help them develop plans for using the right amounts of commercial fertilizers along with animal wastes as nutrients for their crops. The

Research & Demonstration (cont.)

pilot project, begun in 1988, is designed to educate farmers on the benefits of nutrient management. It has already been highly successful in reducing nutrient applications, resulting in economic benefits to farmers and a decreased threat to groundwater.

Efforts to reduce impacts of urban nonpoint source pollution on surface water and groundwater have come primarily from provisions in the Erosion and Sediment Control Law of 1973. The E & S Control Program offers urban BMPs through its 171 local programs. Urban BMPs serve the dual function of preventing damage caused by uncontrolled runoff and in mitigating the effects of the pollutants that are washed from urban streets. Groundwater quality benefits from the control of urban runoff just as does surface water quality.

All of these programs are part of Virginia's Nonpoint Source Management Plan. Under the federal Clean Water Act, states are called to detail their efforts to curb nonpoint source pollution. In Virginia, the Division has identified eight major areas of effort, including control of runoff from agriculture, forestry, urban areas, construction sites, mined land, and the potential impacts of land treatment of wastes and hydrologic modifications to surface streams. Goals, strategies for success, and achievements will be tracked in the Management Plan.

The importance of the work of the Division of Soil and Water Conservation was recognized by the General Assembly in 1988. More than forty new positions were added and funding was increased by almost $3 million. These increases will enable the programs for nonpoint source pollution control to be more effective in protecting the quality of all the waters of the State.

For more information on the Nonpoint Source pollution programs, contact Stuart Wilson, Division of Soil and Water Conservation, 203 Governor St., Suite 206, Richmond, Va., 23219.

Education & Training

VCES Provides Education To Protect Groundwater

The Virginia Cooperative Extension Service (VCES) is a partnership of federal, state and local organizations. As an arm of the Land-Grant Universities, the basic mission of the Cooperative Extension Service is education. The Extension Service reaches out to all of the citizens of Virginia in four main program areas: Agriculture and Natural Resources, Home Economics and Human Nutrition, Community Resource Development and Public Affairs, and 4-H and Youth. VCES has promoted a number of programs to inform the public about groundwater protection.

At the request of the Groundwater Protection Steering Committee, the Extension Service sponsored a series of regional seminars on groundwater protection. Seven seminars were held in late 1987 in locations around the state. Local groundwater conditions and use were described as well as sources of potential pollution, the state strategy for groundwater protection, and local government tools to protect this valuable resource. More than 700 Virginians attended the day-long seminars, and there have been calls for more sessions in 1988.

The Extension Service also offers targeted education programs in fertilizer use. Farming practices can place considerable demands on groundwater, especially through nutrient, organic matter and sediment loadings. Best Management Practices (BMPs) are being promoted by the Extension Service to solve some of these problems. Under provisions of the Chesapeake Bay Initiatives, a nutrient management education program is being started to help farmers avoid using too much fertilizer, thereby reducing the possibility of surface and groundwater pollution. Fact sheets and education programs for homeowners are also being used to let people know that home use of fertilizers and chemicals can have groundwater quality impacts.

Pesticide and herbicide use is of special concern in protecting groundwater. These chemicals can leach from the surface and cause contamination. The VCES has emphasized the water quality implications of using pesticides improperly. The Service trains and certifies pesticide applicators and stresses proper use of these chemicals. New concepts are also being promoted by VCES such as Integrated Pest Management (IPM). IPM emphasizes the use of naturally occurring controls to manage pest populations. IPM does not completely eradicate pests nor does it completely replace chemicals, but it is a useful tool in reducing the amount of chemicals needed.

The chemical, drug, and pesticide unit of the Extension Service maintains fact sheets on agricultural uses, toxicological data, and emergency response, as well as information on pest management. Pesticide use information is compiled by VCES to conduct impact analysis on natural resources. All of these programs serve to provide the public with the information needed to anticipate and prevent groundwater contamination.

For more information, contact Waldon Kerns, Dept. of Agricultural Economics, 214 Seitz Hall, VPI & SU, Blacksburg, Va., 24061.

Day-long groundwater protection seminars attracted more than 700 Virginians in 1987.

Education & Training (cont.)

Technical Training Planned for State Agency Personnel

Effective groundwater protection requires special skills and knowledge. A new technical training program beginning in the fall of 1988 will give state agency personnel the opportunity to increase their ability to understand groundwater protection issues and manage cleanup programs.

Training was a need acknowledged in the *Groundwater Protection Strategy* to enable agencies to cope with the complexities of the groundwater protection mission. There are a number of potential audiences for groundwater training programs but state agency personnel were considered to be the priority group needing special technical training. A survey of agencies carried out by the Groundwater Protection Steering Committee showed a clear preference for two kinds of courses: "Fundamentals of Groundwater and Well Technology" will stress basic knowledge, and "Groundwater Treatment Technology and Corrective Action" will deal with the technicalities of cleaning up contaminated groundwater. These training courses will be offered to agency personnel in the fall of 1988, funded by an EPA groundwater planning grant.

For more information, contact Terry Wagner, VWCB, P. O. Box 11143, 2111 N. HamiltonSt., Richmond, Va., 23230.

Technical training enhances groundwater protection.

Policy Review

Group Considers Need to Clarify State Groundwater Policy

A group of representatives of industry, environmental groups and local governments has been meeting since December 1987 to discuss Virginia's groundwater policy. The group's mission is to review the VWCB's "antidegradation" standard and advise the VWCB whether the standard needs to be clarified to aid citizens and agency personnel. The possible need for clarification of the standard was a major question raised in the *Groundwater Protection Strategy.*

Antidegradation is the term that has been used to describe the Commonwealth's decision to maintain the purity of high quality state waters, rather than allow wholesale degradation of water quality. The antidegradation language is set out in the State Water Control Law (see box).

> *"Waters whose existing quality is better than established standards ...will be maintained at high quality"*
>
> *State Water Control Law*

Interpreted strictly, the Water Law could be held to prohibit all discharges of pollutants to state waters that are considered to be high quality. The VWCB surface water quality management program allows discharges to surface water, but the groundwater standard has generated diverse interpretations about permitting activities which have the potential to cause a discharge to groundwater.

The Group has worked to learn about the multi-faceted groundwater protection issue and members have shared information and understanding. An advisory report will be sent to the VWCB to provide guidance to the Board in deciding whether to revise the regulation. The Advisory group was organized and is staffed by the University of Virginia's Institute for Environmental Negotiation. Funding is provided through an EPA grant.

Organizational Notes

Agencies to Prepare a Groundwater Management Handbook

A handbook of the groundwater-related programs of Virginia's public agencies is being prepared. It will give both citizens and agency personnel a perspective on the management of the groundwater resources of the Commonwealth.

The programs of many state agencies have groundwater implications. The VWCB is charged with protecting state waters from pollution, but all the agencies represented on the Groundwater Protection Steering Committee have programs which directly or indirectly involve groundwater quality. Because of this diverse structure, one of the recommendations in the *Groundwater Protection Strategy* was to prepare a Groundwater Management Handbook.

The idea behind the handbook is to provide a guidebook to the multiple groundwater-related programs. The handbook will be useful to citizens and agency personnel. Both groups can benefit from a roadmap of the regulatory procedures.

The more important role that the handbook will play, however, is to provide groundwater management planners with an understanding of the present management system. Overlapping responsibilities will be identified so that programs can be made more efficient. Gaps in the regulatory scheme will be highlighted and addressed. The handbook will provide planners with the basic tool for analyzing Virginia's groundwater management system.

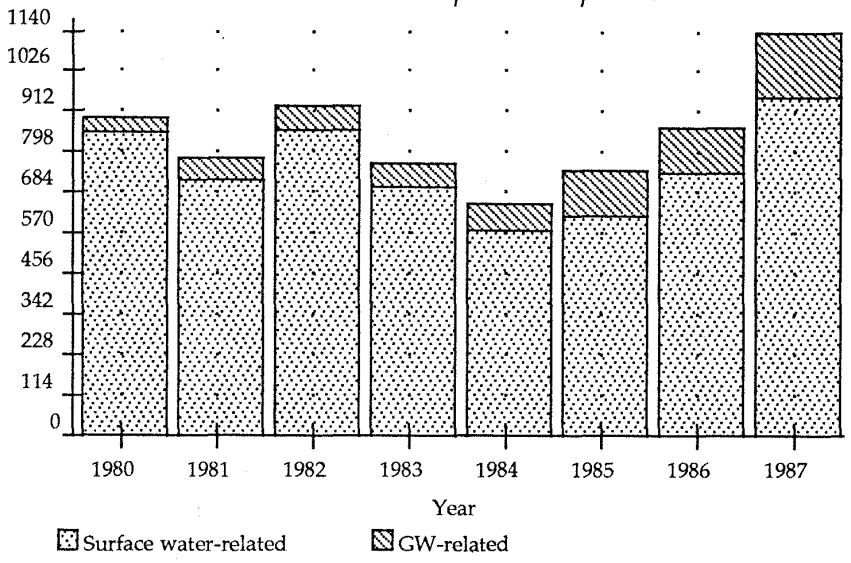
Responding to Groundwater Emergencies

Though the goal of Virginia's groundwater protection effort is to anticipate and prevent groundwater contamination, there will always be a need to provide for emergency response when there is a contamination incident. The Water Control Board's Pollution Remediation Program (PReP) investigates reports of both surface water and groundwater contamination — in recent years, reports of groundwater contamination have been increasing.

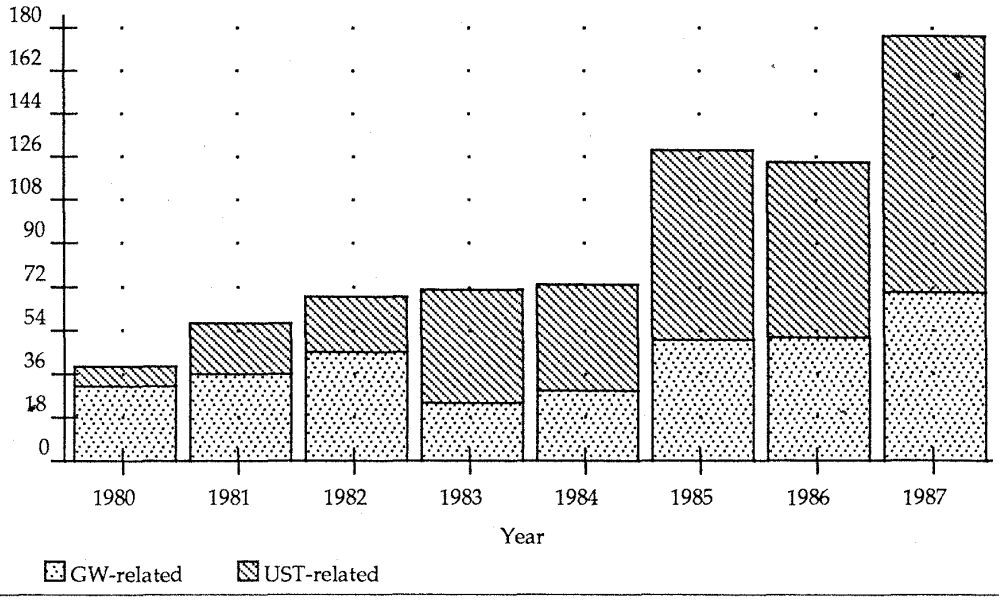
The PReP effort is coordinated with the emergency response efforts of other state agencies. PReP has primary responsibility for responding to incidents that threaten water quality. The Virginia Department of Emergency Services (DES) has direct responsibility for responding to spills of hazardous materials, and DES provides a clearinghouse for after hours emergency calls. The Department of Waste Management is responsible for investigating and remedying water pollution caused by landfills, and the Virginia Department of Health responds when notified of a sewage discharge by advising affected drinking water intakes and by closing affected shellfish beds.

When a pollution incident is reported to PReP, it is evaluated and other agencies are contacted if necessary. When a VWCB response is required, the affected VWCB regional office is contacted and response begins at the local level. The party responsible for the pollution incident is responsible for cleaning up the contamination — it may take many years of effort and monitoring to remedy groundwater contamination.

Total Pollution Response Complaints



Groundwater-related Complaints



Water quality preservation is everyone's concern. If you suspect a pollution incident has occurred, please call:

Virginia Water Control Board
Pollution Response Program

for pollution incidents involving surface and groundwater contamination

1-804-367-0080 24-hour Hotline

Department of Emergency Services

for spills involving hazardous materials

1-804-674-2400 24-hour Hotline

Groundwater Protection Steering Committee
Virginia Water Control Board
P. O. Box 11143
2111 N. Hamilton St.
Richmond, Virginia 23230